"It's out of stock": Impact of service failure messages on customer satisfaction in online grocery retailing

Reema Singh
Stockholm School of Economics
Magnus Söderlund
Stockholm School of Economics
Sofie Sagfossen
STOCKHOLM SCHOOL OF ECONOMICS

"It's out of stock": Impact of service failure messages on customer satisfaction in online grocery retailing

Abstract:

This study examines the impact on customer satisfaction of two aspects of messages that inform that an item is out of stock in an online grocery setting: humanizing the sender and providing an apology. These two message factors were manipulated in a between-subjects experiment, and the results show that both factors influenced the perceived humanness of the sender of the message, which in turn had a positive impact on customer satisfaction. The net result, however, was that only the humanization of the sender produced a significantly higher level of customer satisfaction. This outcome should be seen in the light of the current interest in replacing human employees with humanized virtual agents powered by artificial intelligence (AI): the present study shows that also simple messages, without any AI content, can be humanized – and that this can have positive downstream effects.

Keywords: Online grocery retailing, service recovery, customer satisfaction

Track: Retailing & Omni-Channel Management

1. Introduction

Research on service failures shows that their negative effects on the customer can be mitigated by recovery activities (e.g., Bitner et al., 1990; Migacz et al., 2018; Smith et al., 1999). So far, however, there have been relatively few attempts to examine the impact of such activities in an online grocery setting.

In the present study, our focus is on one particular type of service failure: an item that the customer wants to buy from an online grocery retailer is out of stock (OOS). The existing literature addressing OOS situations is primarily focused on offline grocery stockouts examining the issue either from the perspective of the store (e.g., Gomez, McLaughlin, and Wittink, 2004), from a logistic viewpoint (e.g., Innis and Londe, 1994) or in terms of customer dissatisfaction (Fitzsimons, 2000). However, the OOS issue in online grocery retailing has been under-researched despite its profitability implications; OOS may result in the potential loss of $17 Billion a year globally (Corsten and Gruen, 2018). Moreover, the existing literature (e.g., Fitzsimons, 2000) has acknowledged that OOS should be mitigated, but it has hitherto failed to provide substantiated ways to do so.

Our focus in the present study is on the communicative aspects of an out of stock situation; our point of departure is a setting in which the online grocery retailer knows when an item is out of stock, so that this retailer can inform the customer that this is indeed the case. Contemporary online grocery retailers deal with this situation in different ways. Some state explicitly that an item is out of stock so that the message "Out of stock" or "Temporarily out of stock" appears in relation to an item displayed on the online grocery retailer's website, while others have chosen a less direct communication approach (e.g., claiming that an item needs "pre-ordering"). In an online setting, then, there are several ways to communicate that something is not in stock, yet the existing literature is silent with respect to how different out of stock messages influence the customer.

Accordingly, the specific purpose of the present study is to examine two out-of-stock message factors in an online grocery context and their impact on customer satisfaction. The first factor, humanization of the sender of the message, means that a message comprises information that its sender has human characteristics (such as a name, a face, and a gender). The second factor, apologizing, stems from the service failure and recovery literature in which an apology is often mentioned as something that should be used by the supplier in a service failure situation

(e.g., Migacz et al., 2018; Xu et al., 2019). In addition, the purpose is to address *how* the two factors influence customer satisfaction, and we do so in terms of an assessment of the perceived humanness of the sender of an out-of-stock message as a potential mediating variable.

This study contributes to the service failure literature by addressing the impact of humanizing the sender of failure messages. It also contributes to the literature on humanness and anthropomorphization; this literature is currently focused on various AI-powered agents, yet the present study indicates that relatively simple messages, for which no AIs are needed, can be subject to humanization and that this can enhance customer satisfaction in a service failure situation.

2. Theoretical framework and hypotheses

Our main thesis is that two characteristics of an out-of-stock message, (1) if the sender of the message is humanized or not and (2) if an apology is offered or not, can influence the perceived humanness of the sender, which in turn is assumed to have a positive influence on customer satisfaction (see Figure 1). Customer satisfaction was selected as the dependent variable because it is a prominent variable in many theories, including theories on service failures, and is used in many firms as a main non-financial performance indicator.

**Figure 1: The impact of out of stock messages on
customer satisfaction**
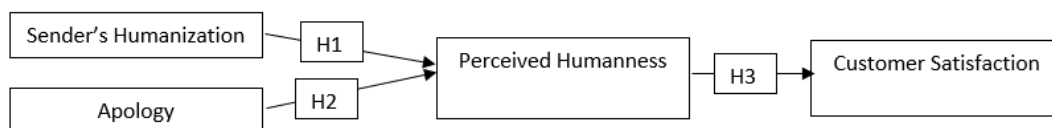
2.1 Sender humanization

Sender humanization has to do with the extent to which a message comprises information about its sender in terms of characteristics of human beings in general. With this view of humanization, a message with no particular information about the sender (such as the message "Out of stock") has a low level of sender humanization, while the same message endowed with information about the sender in terms of generic human features, such as having a name or a job title and a face, has a higher level of sender humanization.

We expect that sender humanization is positively associated with the receiver's perceptions of the sender's humanness. Perceived humanness, a dimension of social perception (Haslam and Bain, 2007), is about the extent to which an individual agent (human or non-human) is ascribed characteristics that are typical for humans (Haslam, 2006), and several authors have suggested that similarity in terms of the physical appearance between one specific agent and humans in general is likely to have a positive influence on perceptions of the agent's humanness (e.g., Aggarwal and McGill, 2007). Therefore, and with respect to out-of-stock messages appearing online, we expect the following:

H1: When an out-of-stock message comprises information about the sender in terms of being an agent with human characteristics, it produces a higher level of perceived sender humanness than a message without such information

2.2 Apologies

Previous research shows that an apology after a service failure can have a positive impact on customer satisfaction, because an apology can boost the receiver's perceptions of justice (Liao, 2007; Smith et al., 1999) and the receiver's positive emotions (Xu et al., 2019), which are two variables that typically have a positive influence on customer satisfaction.

In the present study, however, we consider an alternative route of mediated influence of making apologizes: if a service failure is accompanied by a message comprising an explicit apology, we expect that the presence of the apology contributes positively to perceptions of the sender's humanness. One main reason is that providing an apology (after an activity with problematic outcomes for the receiver and for which the sender is responsible) signals that the sender has understood that the activity has caused discomfort or even harm for the receiver. This understanding, in turn, requires that the sender is capable of reasoning in morality terms – that is to say, the sender is able to distinguish between what is right and wrong (Waytz et al., 2010). And what is right, in the light of research on moral judgments and human morality, as well as in the folk notion of morality, is typically about what does not harm others and what is just in relation to others (Graham et al., 2011). Given that morality is a fundamental aspect of being human (Haidt, 2008), we assume that an apology in a message sent to someone who has

potentially been harmed would boost the perceived humanness of the sender. Therefore, we hypothesize the following with respect to out-of-stock messages appearing online:

H2: When an out-of-stock message comprises an apology, it produces a higher
level of perceived sender humanness than an out-of-stock message without an apology

2.3 Perceived humanness and customer satisfaction

Then, in the next step, we expect that the perceived humanness of the sender has a positive impact on the evaluation of the sender. One reason is that human information processing is biased in such a way that what is perceived to be human has a positive rather than a negative charge (Sears, 1983). This bias can be seen in the light of the social nature of humans; other humans offer promises of social connection, belongingness, and intimacy, which in turn are highly valued outcomes for most humans (Söderlund, 2016). It has also been argued that we humans need other humans for both practical and existential issues (Epley et al., 2018). This means that it makes sense, from an evolutionary point of view, to equip humans with an innate liking for humans. Another reason is that humans' information processing activities are hardwired to deal with communication with other humans, which means that conceptualizing an agent as human (even if it is non-human) allows for a relatively effortless use of well-practiced sense-making activities in response to a message (Rauschnabel and Ahuvia, 2014). This in turn allows for a relatively fluent information processing, and the positive affect associated with this (for the effort-aversive human brain) is likely to carry over, in a valence-congruent way, to the evaluation of the sender (cf. Reber et al., 1998). Furthermore, in a service context, in which the representative of the firm typically *is* the firm from the customer's point of view (Bitner et al., 1990), we assume that the evaluation of the sender of a message, who sends the message on behalf of a firm, is positively associated with overall customer satisfaction in relation to the firm. Therefore, this is hypothesized with respect to out-of-stock messages from an online grocery retailer and customer satisfaction:

H3: Perceived humanness of the sender of an out-of-stock message is positively associated with customer satisfaction

H1-H3 imply that the perceived humanness of the sender mediates the impact of the two message-related factors on customer satisfaction. To assess this explicitly, we hypothesize the following:

H4a: The impact of sender humanization on customer satisfaction is mediated by the perceived humanness of the sender

H4b: The impact of an apology on customer satisfaction is mediated by the perceived humanness of the sender.

3. Research method

3.1 Design, stimulus development and participants

We used a 2 X 2 between-subjects experimental design to test the hypotheses. Humanization of the sender of the message (low vs. high) and apology in the message (absent vs. present) were the manipulated factors. The participants were given a grocery shopping task to shop for "Hostess mini donuts" from a mock grocery website (which we created using the assistance of a website design expert). When the participants visited the bakery page, they were randomly allocated to one of four versions of an out of stock message. In the low sender humanization condition, the message comprised a text stating that the item was out of stock; in the high sender humanization condition, the text appeared with a photo of the store manager (see the Appendix). After exposure to the message, the variables in the hypotheses were measured with questionnaire items. The participants were recruited from MTurk ($n = 354$, $M_{age} = 41$; 49.5% females).

3.2 Measures

Perceived humanness of the sender was measured with the item "My perception of the sender of the out-of-stock message:" followed by three adjective pairs scored on a scale ranging from 1 to 7 (Computer–Human, Machine-like–Human-like, and An algorithm–A person; Cronbach's $\alpha = 0.96$). *Customer satisfaction* was measured with Fornell's (1992) three satisfaction items: "How dissatisfied or satisfied are you with the retailer?" (1 = Very dissatisfied, 7 = Very satisfied), "To what extent did the retailer meet your expectations?" (1 = Not at all, 7 = Totally), and "Imagine a retailer that is perfect in every respect. How near or far from this ideal did you find the retailer?" (1 = Very far from ideal, 7 = Cannot get any closer). Cronbach's $\alpha = 0.89$ for this scale.

4. Analysis and results

A two-way ANOVA with perceived humanness as the dependent variable was used to test H1-H2. This analysis resulted in a significant main effect of humanization of the sender (F (1,353) = 13.88, $p < .01$). Since the level of perceived humanness was lower in the low humanization condition ($M = 4.05$) than in the high humanization condition ($M = 4.83$), H1 was supported. The main effect of apology on perceived humanness was also significant (F (1,353) = 9.47, $p < .01$). The level of perceived humanness was lower in the no apology condition ($M = 4.11$) than in the apology condition ($M = 4.77$), so H2 was supported. In addition, there was a significant interaction effect (F(1.353 = 11.93), $p < .01$) indicating that the mean perceived humanness difference between providing no apology and providing an apology was modest in the high humanized condition; in the low humanizing condition, however, providing an apology boosted the perceived humanness mean in relation to not providing an apology. H3 was tested by computing the zero-order correlation between perceived humanness and customer satisfaction. This correlation was significant ($r = 0.44$, $p < .01$), so H3 was supported.

H4a and H4b, the mediation hypotheses, were tested with Hayes (2012) PROCESS approach (Model 4 was used with 5000 bootstrap samples). First, in an analysis with humanization of the sender as the independent variable (scored as 1 = low and 2 = high), perceived humanness as the mediator and customer satisfaction as the dependent variable, there was a significant indirect effect ($b = 0.12$, 95% CI [0.06, 0.19]) on customer satisfaction. This provides support for H4a. Second, in same analysis but with apology as the independent variable (scored as 1 = no apology, 2 = apology), there was a significant indirect effect ($b = 0.21$, 95% CI [0.09, 0.37]) on customer satisfaction. Thus, H4b was supported, too. However, a 2 X 2 ANOVA with the two message factors and customer satisfaction as the dependent variable produced a main effect only for the sender humanization factor (F (1.352 = 18.35), $p < .01$). Satisfaction was higher when sender humanization was high ($M = 4.77$) as opposed to low ($M = 4.13$). In other words, and with respect to the net downstream effect, the sender humanization factor outperformed the apology factor with respect to the levels of satisfaction they generated.

5. Discussion and Implications

Our findings indicate that an out of stock message that is humanized, in terms of comprising clues suggesting that a real human is the sender, has a positive impact on customer satisfaction.

This implies that it is relatively easy for online retailers to mitigate the negative impact of an out of stock situation by creating messages that are humanized (instead of the common contemporary approach that basically informs the customer than an item is out of stock). Moreover, there is a long tradition in the service failure and recovery literature to stress that apologies can be useful as response activities to failure situations. In our study, an apology did contribute positively to the humanness perceptions, yet apologies were outperformed by humanizing the sender of a service failure message with respect to the net result in terms of the level of customer satisfaction.

The results regarding perceived humanness as a mediating variable contributes to the literature on service recovery activities in which this variable hitherto has not been examined. The role of perceived humanness as a mediating variable in the present study can also be seen in the light of ongoing development and research in the area of artificial intelligence (AI) in services, in the sense that a general assumption is that AIs with whom the customer interacts should be provided with human characteristics. In other words, it is typically assumed that "what is human is good". The present study indicates that this can indeed be the case, but it also shows that it is seems possible for online retailers to obtain positive effects on perceived humanness with messages generated without any AI content. The findings can be of great benefit to retailers; instead of investing in AI-technologies, they can with simple means humanize their messages to customers (and this is likely to have a positive impact on customer satisfaction).

References

Aggarwal, P. & McGill, A.L. (2007). Is that car smiling at me? Schema congruity as a basis for evaluating anthropomorphized products. *Journal of Consumer Research*, 34, 468-479.

Bitner, M.J., Booms, B.H., & Tetreault, M.S. (1990), The service encounter: Diagnosing favorable and unfavorable incidents, *Journal of Marketing*, 54, 71-84.

Corsten, D.& Gruen, T.W. (2018). *Online Availability - A Worldwide Study of Extent, Shopper Reactions, and Strategies for Non-Food Categories in Digital Retail*. Retrieved from https://www.gmaonline.org/filemanager/GMA090_Online_Availabilit_Research_Report_Digital .pdf. (Last accessed on December 3, 2019).

Epley, N. (2018). A mind like mine: The exceptionally ordinary underpinnings of anthropomorphism. *Journal of the Association for Consumer Research*, 3, 591-598.

Fitzsimons, G. J. (2000). Consumer response to stockouts. *Journal of Consumer Research*, 27, 249-266.

Fornell, C. (1992), A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, 56, 6-21.

Haidt, J. (2008). Morality. *Perspectives on Psychological Science*, 3, 65-72.

Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review*, 10, 252-264.

Haslam, N. & Bain, P. (2007). Humanizing the self: Moderators of the attribution of lesser humanness to others. *Personality and Social Psychology Bulletin*, 33, 57-68.

Hayes, A.F. (2012), PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling. White paper, The Ohio State University.

Innis, D. E., & La Londe, B. J. (1994). Customer service: the key to customer satisfaction, customer loyalty, and market share. Journal of business Logistics, 15(1), 1.

Liao, H. (2007). Do it right this time: The role of employee service recovery performance in customer-perceived justice and customer loyalty after service failures. *Journal of Applied Psychology*, 92, 475-489.

Migacz, S. J., Zou, S., & Petrick, J. F. (2018). The "terminal" effects of service failure on airlines: Examining service recovery justice theory. *Journal of Travel Research*, 57, 83-98.

Rauschnabel, P.A., & Ahuvia, A.C. (2014). You're so lovable: Anthropomorphism and brand love. *Journal of Brand Management*, 21, 372-395.

Reber, R., Winkielman, P., & Schwarz, N. (1998), Effects of perceptual fluency on affective judgments, *Psychological Science*, 9, 45-48.

Sears, D.O. (1983). The person-positivity bias. *Journal of Personality and Social Psychology*, 44, 233-250.

Smith, A.K., Bolton, R.N., & Wagner, J. (1999). A model of customer satisfaction with service encounters failure and recovery. *Journal of Marketing Research*, 36, 356-372.

Söderlund, M. (2016). Employee mere presence and its impact on customer satisfaction. *Psychology & Marketing*, 33, 449-464.

Waytz, A., Gray, K., Epley, N., & Wegner, D.M. (2010). Causes and consequences of mind perception. *Trends in Cognitive Sciences*, 14, 383-388.

Xu, X., Liu, W., & Gursoy, D. (2019). The impacts of service failure and recovery efforts on airline customers' emotions and satisfaction. *Journal of Travel Research*, (6), 1034-1051.

Appendix:

Weblinks of the mock grocery website used in the experimental design. The participants visited the bakery page to shop for Hostess mini donuts and were shown one of the following versions of an out of stock message:

Manipulation -Apology

https://onlinegrocer.wixsite.com/oosa   https://onlinegrocer.wixsite.com/shoph

Manipulation: No- Apology

https://onlinegrocer.wixsite.com/ognh   https://onlinegrocer.wixsite.com/sm-na